

In The Claims:

This listing of the claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) An apparatus capable of establishing different video sample stream processing channels between a plurality of video sample stream inputs and a video sample stream output, said apparatus comprising:

a multi-state routing network comprising wiring to route a video sample stream, said multi-state routing network comprising:

a) outputs that are coupled to the inputs of a plurality of video sample stream channel processing segments, each channel processing segment comprising at least one signal processing block;

b) inputs that are coupled to the outputs of said video sample stream channel processing segments;

c) said video sample stream inputs; and,

d) said video sample stream output.

2. (Previously Presented) The apparatus of claim 1 wherein one of said signal processing blocks is one or more of a deinterlacer and a frame rate converter.

3. (Cancelled)

4. (Previously Presented) The apparatus of claim 1 wherein one of said signal processing blocks is one or more of a scaler and a color space converter.

5. (Cancelled)

6. (Previously Presented) The apparatus of claim 4 wherein said color space converter is one or more of a color difference to trichromatic color space converter and a trichromatic to color difference color space converter .

7. (Original) The apparatus of claim 6 wherein said color difference to trichromatic color space converter is a color difference to RGB color space converter.

8. (Cancelled)

9. (Previously Presented) The apparatus of claim 6 wherein said trichromatic to color difference color space converter is an RGB to color space converter.

10. (Previously Presented) The apparatus of claim 1 wherein one of said signal processing blocks is one or more of a 4:4:4 to 4:2:2 color difference converter and a 4:2:2 to 4:4:4 color difference converter.

11. (Cancelled)

12. (Original) A method, comprising:

a) routing a first digital video sample stream having a first format through a first channel processing segment, said first channel processing segment selected from amongst a plurality of channel processing segments;

b) routing a second digital video sample stream having a second format through a second channel processing segment, said second channel processing segment selected from amongst said plurality of channel processing segments; and,

c) routing a third digital video sample stream having a third format through said first and second channel processing segments, said first and second channel processing segments selected from amongst said plurality of channel processing segments.

13. (Currently Amended) The method of claim 12 further comprising one or more of changing the state of a multi-state wiring network between a) and b) and changing the state of said multi-state wiring network between b) and c).

14. (Cancelled)

15. (Previously Presented) The method of claim 12 further comprising deinterlacing said first digital video sample stream with said first channel processing segment.

16. (Previously Presented) The method of claim 15 further comprising scaling said second digital video sample stream with said second channel processing segment.

17. (Previously Presented) The method of claim 16 further comprising deinterlacing said third digital video sample stream with said first channel processing segment and scaling said third digital video sample stream with said second channel processing segment.

18. (Previously Presented) The method of claim 15 further comprising performing frame rate conversion on said second digital video sample stream with said second channel processing segment.

19. (Previously presented) The method of claim 18 further comprising deinterlacing said third digital video sample stream with said first channel processing segment and performing frame rate

conversion on said third digital video sample stream with said second channel processing segment.

20. (Previously Presented) The method of claim 19 further comprising scaling said third digital video sample stream with said second channel processing segment.

21. (Previously Presented) The method of claim 15 wherein said first digital video sample streams is in a color difference format during said deinterlacing.

22. (Previously Presented) An apparatus, comprising:

a digital video sample stream conversion unit to establish any of a plurality of different digital video sample stream processing channels, said digital video sample stream conversion unit comprising:

a) a first channel processing segment to perform color space conversion, said first channel processing segment comprising a color space converter;

b) a second channel processing segment to perform deinterlacing, said second channel processing segment comprising a deinterlacer;

c) a third channel processing segment to perform scaling, said third channel processing segment comprising a scaler; and,

d) a multi-state routing network on a semiconductor chip comprising multiplexers implemented with logic circuitry and wiring, said multi-state routing network having outputs coupled to inputs of said channel processing segments, said multi-state routing network having inputs coupled to outputs of said channel processing segments.

23. (Currently Amended) The apparatus of claim 22 further comprising a control function coupled to said multi-state routing network with dedicated control lines to set said multi-state

network in any one of a plurality of states, each one of said states corresponding to a different one of said digital video sample stream processing channels.

24. (Currently Amended) The apparatus of claim 23 further comprising a control function coupled to said multi-state routing network with a bus to set said multi-state network in any one of a plurality of states, each one of said states corresponding to a different one of said digital video sample stream processing channels.

25. (Previously Presented) The apparatus of claim 22 wherein said multi-state routing network comprises a first digital video sample stream input, a second digital video sample stream input and a digital video sample stream output.

26. (Previously Presented) The apparatus of claim 25 where said digital video sample stream output is coupled to an output of one of said multiplexers.

27. (Previously Presented) The apparatus of claim 26 wherein said one of said multiplexers has an input channel coupled to a channel processing segment output.

28. (Previously Presented) The apparatus of claim 25 wherein one of said multiplexers has an output coupled to a multi-state routing network output, said multi-state routing network output also coupled to an input of said second channel processing segment.

29. (Previously Presented) The apparatus of claim 28 wherein another one of said multiplexers has an input coupled to a multi-state routing network input, said multi-state routing network also coupled to an output of said second channel processing segment.

30. (Previously Presented) A machine readable medium having stored thereon a description of semiconductor chip circuit design, said semiconductor chip circuit design comprising a description of:

a digital video sample stream conversion unit to establish any of a plurality of different digital video sample stream processing channels, said digital video sample stream conversion unit comprising:

a) a first channel processing segment comprising logic circuitry to perform color space conversion;

b) a second channel processing segment comprising logic circuitry to perform deinterlacing;

c) a third channel processing segment comprising logic circuitry to perform scaling; and,

d) a multi-state routing network comprising multiplexers and wiring, said multi-state routing network having outputs coupled to inputs of said channel processing segments, said multi-state routing network having inputs coupled to outputs of said channel processing segments.